

stances like CO<sub>2</sub>. However, there is no doubt that the assessment is required to include as many substances as possible, such as chemical substances. There are no methods in Japan that are available for more than one hundred substances. Consequently, it is important to develop the method that is applicable for most environmental loading substances, as far as possible.

Internationally, impact assessment is now in a developing stage. Subjective judgement by the developers of procedures or LCA practitioners will unavoidably be introduced in weighting process and it would take time to meet a consensus to a certain degree. Currently, the improvement of transparency and reliability, and correspondence with an inventory database are quite essential in Japan and studies are required for the development of the advanced methodology of assessment for environmental impacts considering the problems noted above.


## References

- AKAI, M. (1999): Economic Valuation in LCA. Potential in Supporting Decision Making. Proceedings of EcoDesign '99: First International Symposium on Environmentally Conscious Design and Inverse Manufacturing, February 1999, Tokyo, Japan, 802-805
- Beltrani, G. (1997): Safeguard Subjects: The Conflict Between Operationalization and Ethical Justification. *Int. J. LCA* 2 (1) 45-51
- CONSOLI, F.; ALLEN, D.; BOUSTEAD, I.; FAVA, J.; FRANKLIN, W.; JENSEN, A.; OUDE, N.; PARRISH, R.; PERRIMAN, R.; POSTLETHWAITE, D.; QUAY, B.; SÉGUIN, J.; VIGON, B. (1993): Guideline for Life-Cycle Assessment: 'A Code of Practice'. From the SETAC Workshop held at Sesimbra
- FINKBEINER, M.; SAUR, K.; KREISSIG, J.; HERRMANN, C. (1999): LCI for Photocopier, Contribution to JEMAI's Project, Comparing LCA Approaches
- GOEDKOOP, M. (1995): The Eco-indicator 95. Final report and manual for designers, Amersfoort
- GOEDKOOP, M.; HOFFSTETTER, P.; MÜLLER-WENK, R.; SPRIEMSMMA, R. (1998): The Eco-Indicator 98 Explained. *Int. J. LCA* 3 (6) 352-360
- HEIJUNGS, R.; GUINÉE, J.B.; HUPPES, G.; LANKREIJER, R.M.; UDO DE HAES, H.A.; SLEESWIJK, A. (1992): Environmental Life Cycle Assessment of Products Backgrounds
- HOFFSTETTER, P. (1996): Towards a Structured Aggregation Procedure. In Braunschweig et al. (1996) 122-211
- ISO14040 (1997): Environmental Management – Life Cycle Assessment – Principles and Framework
- ISO/DIS14042 (1998): Environmental Management. Life Cycle Assessment. Life Cycle Impact Assessment
- ITSUBO, N.; MATSUNO, Y.; INABA, A.; YAMAMOTO, R. (1998): Environmental Impact Assessment for Materials Produced in Japan. Proceedings of The Third International Conference on EcoBalance, pp. 375-378
- ITSUBO, N.; YAMAMOTO, R. (1999): Application of Life Cycle Assessment to Manufacturing of Nonferrous Metals. *J. Japan Inst. Metals* 63 (2) 208-214
- JAGER, D.T. et al.: EUSES the European Union System for the Evaluation of Substances. National Institute of Public Health and the Environment (RIVM), The Netherlands; available from the European Chemicals Bureau (EC/JRC), Ispra, Italy
- LINDEIJER, E. (1996): Normalisation and Valuation. In Udo de Haes (1996) 75-93
- MATSUNO, Y.; INABA, A.; BETZ, M. (1998 a): Valuation of Electricity Grid Mixes in Japan with Application of Life-Cycle Impact Assessment Methodology. Proceedings of The Third International Conference on EcoBalance, pp. 97-100
- MATSUNO, Y.; INABA, A.; ITSUBO, N.; YAMAMOTO, R. (1998 b): Development of Life Cycle Impact Assessment Weighting Methodology for Japan. Weighting Methodology Based on the Distance-to-Target Method. *Journal of the Japan Institute of Energy*, 1139-1147
- McKONE, T.E. (1993): CalTOX - A Multimedia Total-Exposure Model for Hazardous-Wastes Sites Part I: Executive Summary, prepared for the State of California, Department Toxic Substances Control, Lawrence Livermore National Laboratory, Livermore, CA, UCRL-CR-111456Pt1
- Nagata, K.; Yokota, R.; Ureshino, M.; Maeno, T. (1996): Development on Valuation Method of LCA. 2<sup>nd</sup> International Conference on EcoBalance, pp. 161-164
- Stehen, B. (1996): Swedish Environmental Research Institute, IVL, Göteborg, EPS-Default Valuation of Environmental Impacts from Emission and Use of Resources Version 1996
- UDO DE HAES, H.A.; JOLLIET, O.; FINNVEDEN, G.; HAUSCHILD, M.; KREWITT, W.; MÜLLER-WENK, R. (1999): Best Available Practice Regarding Impact Categories and Category Indicators in Life Cycle Impact Assessment. Background Document for the Second Working Group on Life Cycle Impact Assessment of SETAC-Europe (WIA-2). *Int. J. LCA* 4 (2)
- UDO DE HAES, H.A. et al. (1996): Towards a Methodology for Life Cycle Impact Assessment. SETAC-Europe, Brussels
- YASUI, I. (1998): A new Scheme of Life Cycle Impact Assessment Method Based on the Consumption of Time. Proceedings of The Third International Conference on EcoBalance, pp. 89-92

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